

SINGING BEHAVIOR OF THE SWAINSON'S WARBLER

BROOKE MEANLEY

THE Swainson's Warbler (*Limnothlypis swainsonii*), relatively common in some areas, is a difficult bird to locate because of the character of its habitat, its neutral color, and its habit of spending much time close to or on the ground in the shade. Thus, it would rarely be observed were it not for its song.

Its song, one of the outstanding of warbler songs, has been analyzed by Gunn (in Griscom and Sprunt, 1957:26-27). Brewster's (1885:72-74) description of its singing behavior has been cited in most of the later writings on this species.

As part of a life history study of this species, I obtained information on its singing behavior, particularly during the springs of 1965 and 1966. Most observations were made in the Ocmulgee River floodplain forest a few miles south of Macon, Bibb County, Georgia, and in the Dismal Swamp, Nansemond County, Virginia. Observations from other years and localities also are included.

Methods of study involved listening to and observing birds on their territories. As a guide for the conduct of this study, I have made use of Harold Mayfield's report of his study of the Kirtland's Warbler (*Dendroica kirtlandii*) (1960). Time used in this study is Eastern Standard Time, unless otherwise indicated.

SINGING BEHAVIOR ON GROUND AND IN TREES

The Swainson's Warbler sings from the ground, and from trees, shrubs, and vines, usually below 30 feet. Singing from the ground usually is more sporadic since it is done while hunting for food. After a male has spent some time on the ground foraging and intermittently singing, it may fly to the limb of a tree to rest, preen, or continue singing.

During the first few days after they arrive on the breeding grounds, birds in the Ocmulgee River floodplain forest catenbrakes sing considerably more often from the ground than from trees or shrubs. In 40 hours of observations, three of four individuals were observed to sing only from the ground during their first week, 12-19 April 1965. In April 1966, during the first few days on the breeding grounds, a male sang only from the ground when under observation 10 hours during parts of 4 days (12-15 April). When I next observed this bird, on 28 April, it was also singing from trees. Another male sang 135 songs from the ground and 65 from a tree when under observation for 90 minutes on 15 April.

When singing in a tree one of the Swainson's Warbler's favorite perches is a dead branch well out from the trunk in the lower part of a tree.

It sings from a stationary position when perched in a tree or shrub, as pointed out by Brewster (1885:73-74): "While singing he takes an easier posture, but rarely moves on his perch. If desirous of changing his position he flies from branch to branch instead of hopping through the twigs in the manner of most warblers." However, a singing bird may reverse its position on the same perch and resume singing while faced in the opposite direction.

In the course of one hour, a Charleston, West Virginia male sang from 18 perches, once only from each of 17, and 5 times from 1. The shifting from perch to perch by a Swainson's Warbler during the first half hour (plus) of morning song was noted in the Dismal Swamp, Virginia, on 3 June 1966. The bird started singing at 4:27 AM. It sang from the first location for 11 minutes, from the second for 10 minutes, from the third for 10 minutes, from the fourth for 4 minutes, from the fifth for 1 minute, and from the sixth for 1 minute. It began feeding at 5:15 (for the first time that morning) and singing from the ground.

SECONDARY, FLIGHT, AND INCOMPLETE SONGS

Secondary Songs (whisper and subsong) have been defined by Berger (1961:169) as follows: the whisper song "as the soft inward rendering of the primary advertising song, with or without variations." "Subsong differs from whisper song in that it is unlike the primary advertising song." Secondary songs of the Swainson's Warbler were sung mainly from the ground, but occasionally from trees, shrubs, and logs. They were given throughout the breeding season. The bird's head was not tilted upward when singing the secondary songs as when singing the primary advertising song.

Mayfield (1960:127) thought that the Kirtland's Warbler sang whisper songs mainly when other males were nearby. Most males that I heard were in isolated territories, and to my knowledge, other males were not nearby. Secondary songs were seldom audible beyond 30 feet. They were often repeated continuously for as long as 3 minutes.

Flight Songs that I heard had no resemblance to the primary advertising song or secondary songs. A bird that had just chased another out of its territory took off from the ground and flew in a spiralling flight to a height of about 35 feet, continuously singing as it flew upward.

Incomplete Songs or songs without endings and songs consisting of only the first, second, or third notes may be heard at any time throughout the breeding season. They are sometimes given when a bird is startled, and often at the beginning of a course of songs. They are more often heard in the latter part of the breeding season than in the earlier part.

SEASONAL SONG CYCLE

The Swainson's Warbler sings vigorously from the time it arrives on its breeding grounds in April, until the nesting season is over, which is usually by the latter part of June. Thereafter singing becomes more sporadic.

On 16 June, in the Dismal Swamp, a male whose mate was incubating sang several songs during each half hour of the day from 5:30 AM to 4:40 PM (when I left its territory). On 30 June, the same male was singing almost as frequently as on the 16th, although the nest of the pair had been destroyed.

In floodplain forests of the Ocmulgee River, Georgia, and Arkansas River, Arkansas, I heard a few individuals singing during each day in July and August. On 6 August 1966, during a 2 hour period (11:00 AM to 1:00 PM C.S.T.) that I was in a canebrake near Pendleton Ferry, Arkansas, a male sang 93 songs.

Mayfield (1960:128-129) had the impression that Kirtland's Warbler males "sang more when not in close company with the female—that is if unmated, or if the mate is incubating eggs or brooding young—and less while the pair are in close companionship during pre-incubation." I observed the same behavior in the Swainson's Warbler at Alexandria, Louisiana, and at Macon, Georgia. At Macon, 25 to 28 April 1963, I observed the singing behavior of four territorial males in a 7.5 acre tract of cane. Only one of the four males was mated. The three unmated males sang vigorously through most of the day, while the mated male sang only in the early morning up to about 7:30 AM. But when the female began nest building the male resumed his schedule of singing during almost every hour of the day. While the female builds the nest, incubates, and broods the young, the male sings up to within about 30 feet of the nest, but usually at greater distances.

BEGINNING AND END OF DAILY SONG

The daily singing schedules of the Swainson's Warbler and other woodland passerine birds are rather similar. The first singing of the Swainson's Warbler and other woodland birds was noted on a mild cloudy morning in the Ocmulgee River floodplain forest, 14 April 1966. Sunrise was at 6:07. The first bird that sang was a Cardinal (*Richmondia cardinalis*), at 5:25 AM; followed by a Rufous-sided Towhee (*Pipilo erythrophthalmus*), at 5:32 AM; White-throated Sparrow (*Zonotrichia albicollis*), at 5:33; Wood Thrush (*Hylocichla mustelina*), at 5:35; and then two Swainson's Warblers, at 5:47. The Swainson's was the first Warbler to sing, followed by the Prothonotary Warbler (*Protonotaria citrea*), at 5:55; and Hooded Warbler (*Wilsonia citrina*), at 5:57. Almost all species of woodland birds were singing by 6:00 AM.

TABLE 1

SONGS PER MINUTE IN COURSES BY A TERRITORIAL MALE SWAINSON'S WARBLER:
4:15-6:43 PM*

Length of course	Songs/minute
4:15-4:20 —	8, 5, 5, 3, 2
4:27-4:32 —	8, 6, 5, 2, 4
4:40-4:46 —	7, 7, 7, 4, 4, 4
4:50-5:03 —	8, 6, 4, 5, 5, 4, 5, 6, 6, 5, 5, 4, 1
5:13-5:25 —	9, 6, 5, 4, 5, 4, 4, 4, 3, 4, 4, 2
5:26-5:31 —	5, 5, 5, 6, 5
5:48-5:51 —	8, 4, 1
6:14-6:16 —	5, 5
6:33-6:38 —	7, 5, 3, 4, 2
6:40-6:43 —	5, 6, 4

* Dismal Swamp, Virginia—15 June 1966.

In the Dismal Swamp, Virginia, in a section of swamp forest, 3 June 1966, the first Swainson's Warbler sang at 4:27 AM, following a Cardinal, Wood Thrush, Wood Pewee (*Contopus virens*), Crested Flycatcher (*Myiarchus crinitus*), Hooded Warbler, and Tufted Titmouse (*Parus bicolor*) all of which began singing after 4:05. Sunrise was at about 4:44 AM.

On 14 April, in the Ocmulgee forest, two Swainson's Warblers with adjoining territories sang up to 7:00 PM and 7:14 PM, respectively. Sunset on that date was at about 7:00 PM. On 2 June, in the Dismal Swamp, a Swainson's sang until 6:45 PM. Only the Wood Thrush, Cardinal, and Wood Pewee sang later in that section of the woods. Sunset was at about 7:28 PM.

RATE OF SINGING

Songs are given in courses or series, that is, periods of steady singing for several minutes at a time. Sometimes in the early morning the pause between courses is so brief that they seem to run for one-half hour or more. The rate of singing is usually faster at the beginning of a course of songs (see Table 1).

During the first hour of morning song on 2 June, a Dismal Swamp male sang at a fast but gradually diminishing rate of speed: 9 songs per minute for the first eight minutes, 5-6 per minute thereafter. Norris and Hopkins (1947:8) noted that the average time interval between songs of a male at Tifton, Georgia was 10.7 seconds.

The rate of singing is sometimes relatively constant over long periods of time. A male in the Ocmulgee floodplain forest, 19 April, sang between

TABLE 2
NUMBER OF SONGS PER 15 MINUTE INTERVAL OF A TERRITORIAL MALE SWAINSON'S WARBLER*

Period ending:	Minutes				Total	Temperature degrees F (in woods)
	15	30	45	60		
Hour	Songs (N)					
4:00 AM	0	27	84	75	186	42
5:00	61	33	50	48	192	47
6:00	52	51	44	47	194	51
7:00	54	53	48	43	198	52
8:00	38	47	35	35	155	59
9:00	24	23	29	0	76	61
10:00	0	0	0	0	0	67
11:00	0	0	0	0	0	67
12:00	0	0	0	0	0	69
1:00 PM	0	0	1	0	1	68
2:00	0	25	7	3	35	70
3:00	8	21	12	31	72	70
4:00	21	1	20	17	59	69
5:00	0	0	0	0	0	62
6:00	0	0	0	0	0	60
7:00	0	0	0	0	0	55
					Total	1168

* Observation made 2 June 1966, at Dismal Swamp, Nansemond County, Virginia.
Sunrise about 4:44 AM, sunset about 7:28 PM. Sunny most of day.
First song at 4:27 AM, sang until 6:45 PM previous evening.

40 and 46 songs (40, 42, 46, 43, 42) each 15 minute period from 8:00 to 9:15 AM. See Table 2 for songs per 15 minute interval by a Dismal Swamp male.

DISCUSSION

On hot June days in the Dismal Swamp, I found the Swainson's Warbler to be one of the most frequent singers in the woods if birds still had active territories. The Red-eyed Vireo (*Vireo olivaceus*) sang more continuously, but its song did not stand out like the Swainson's. In the early afternoon when song activity is generally at a minimum for most birds, the Swainson's Warbler was often the most persistent singer in the swamp.

The frequency of singing depends upon the time of day, stage of the breeding cycle, proximity of territories, territorial conflict, weather, the singing of other species, and perhaps other factors. With the exception of the song of another Swainson's Warbler, the comparatively loud song of the Carolina Wren (*Thryothorus ludovicianus*) seems to be more effective in initiating singing activity by the Swainson's Warbler than any other song in the Coastal Plain.

Brewster (1885:72) says that the Swainson's Warbler is "ventriloquial to such a degree that there is often great difficulty in tracing it to its source." I have not had that impression after listening to this species sing each spring for the past 22 years, but a friend who recently spent the day with me in the Dismal Swamp listening to the Swainson's Warbler for the first time, thought that birds he heard were singing from high in the trees, when actually they were singing from the ground or at a height of 20 feet or less.

SUMMARY

Studies of the singing behavior of the Swainson's Warbler were conducted mainly near Macon, Bibb County, Georgia, and in the Dismal Swamp, Nansemond County, Virginia, during the springs of 1965 and 1966. Singing behavior on the ground and in trees is discussed. Swainson's Warblers sing vigorously from the time they arrive on the breeding ground until the latter part of June, when the singing of most birds becomes more sporadic. At Macon, Georgia, in mid-April, morning song of one bird began about 20 minutes before sunrise; and evening song of the same bird ceased about 15 minutes after sunset. Songs were delivered at the rate of about 8-9 per minute for the first few minutes of morning song, decreasing to 5-6 per minute for most of the morning. Songs are given in courses or series. The rate of singing is usually faster at the beginning of a course. The number of songs sung by a territorial male in 1 day in the Dismal Swamp, Virginia, 2 June, was 1168. It produced 280 songs the first hour, and sang at a fairly constant rate from 5:00 to 8:00 AM, 192, 194, 198 songs per hour.

ACKNOWLEDGMENT

I am grateful to Dr. Paul A. Stewart for reviewing this manuscript.

LITERATURE CITED

- BERGER, A. J.
1961 Bird study. John Wiley and Sons, New York.
- BREWSTER, W.
1885 Swainson's Warbler. *Auk*, 2:65-80.
- GRISCOM, L. AND A. SPRUNT, JR.
1957 The warblers of America. Devin-Adair Co., New York.
- MAYFIELD, H.
1960 The Kirtland's Warbler. Cranbrook Inst. of Sci., Bloomfield Hills, Michigan.
- NORRIS, R. A., AND M. HOPKINS, JR.
1947 The breeding of Swainson's Warbler near Tifton, Georgia. *Oriole*, 12:7-9.
- U. S. DEPARTMENT OF THE INTERIOR, PATUXENT WILDLIFE RESEARCH CENTER,
LAUREL, MARYLAND, 27 AUGUST 1966.